REMARKS

In response to the Office Action dated March 13, 2001, Applicants respectfully submit the amendments above and the remarks below for the Examiner's consideration.

Applicants would like to thank the Examiner for his very helpful and cordial interview with their attorney in advance of filing this response. It is Applicants' understanding from that interview that: (1) the amendments recited above are of a type and scope to move the claims toward allowance (with the caveat by the Examiner that he must ensure that no amendment moves any claim into conflict with prior art of record); (2) if the Examiner must reassert a prior art rejection in view of any of the amendments made above, he will make such rejection pursuant to a non-final action, allowing Applicants to address the basis of rejection through amendment, argument or a combination of both; and (3) there was a typographical error in the March 13, 2001 Official Action at Section 4, paragraph 3 concerning US Patent 5,288,502 which should read ". . . and are found to be persuasive in view of the amendments." A copy of the document listing the proposed amendments to the claims that was previously provided to the Examiner for his pre-review is attached for convenience.

II. Cancellation of Non-elected Claims

Claims 60-68 were previously withdrawn pursuant to a restriction requirement and are hereby cancelled.

II. Rejection of Claims Under 35 U.S.C. 112, Second Paragraph

Claims 1, 2, 4-45, 46-59, and 69-71 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Generally, Applicants have addressed the Examiner's rejections in each claim as follows:

- Where a claim uses "consisting of" language, and where a claim depends from such a claim, the limitations of the base independent and the dependent claim, as well as that of any intervening claims, are included in a new independent claim (see new claims 72-84). The previous dependent claims now made duplicative are cancelled.
- Where a claim uses "one or more" in referring to the number of phases of internal, immiscible liquid phases, that language is removed from the claim.
- Where a claim uses "further consisting of" language, that language is removed from the claim.

Other, more specific rejections under Section 112, Second Paragraph as were raised by the Examiner have been addressed individually as noted above.

As noted, the Examiner has kindly provided a pre-review of the claims as amended above and tentatively agreed that all Section 112, Second Paragraph rejections would be overcome. The amendments requested above are those as pre-reviewed except for correction of any clerical mistakes found by Applicants. No amendment raises any new matter. As such, Applicants do not believe that these amendments raise any new questions of patentability over the prior art.

In making the amendments, Applicants have not amended certain claims depending from now-amended base claims. In particular, the following reasons are given for not amending particular dependent claims now depending on amended claims:

- Claim 6 does not add any element to claim 1, rather it further restricts a single element of that claim.
- Claims 9-23 now depend from new independent claim 75, and in so doing, further limit an element of that claim, and do not add any element.
- Claim 27 no longer depends from claim 1, and in depending from new dependent claim 72, does not add any element to that new claim, rather it further limits an element of that new claim.
- Claims 30-35 do not add any elements to the broad claim, rather they further limit the element in the broad claim.
- Claim 40 does not add any element to independent claim 1, rather it further limits the microcapsule composition of claim 1.
- Claims 49-50 have been amended to depend from new independent claim 79, and do not add any element to that claim, rather they further limit an element of that claim.

Thus, Applicants respectfully request that this basis of rejection of the claims be removed and that the subject claims 1, 2, 4-45, 46-59, and 69-71, as well as new claims 72-84, be forwarded to allowance.

V. C nclusion

Applicants believe that the foregoing comprises a full and complete response to the Office Action of record. Accordingly, favorable reconsideration and subsequent allowance of the pending claims is earnestly solicited. If the Examiner has any questions or suggestions concerning the application or allowance of any claim thereof, or feels that an interview would advance the examination process, the Examiner is requested to call the Applicants' undersigned attorney at the direct dial number printed below.

Respectfully submitted,

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James M Cate
Signature

Version With Markings to Show Changes Made

IN THE CLAIMS

Please cancel the following claims: 2, 4, 5, 7, 8, 36, 42, 45, 47, 48, 51-54, 57-59, 70, and 71.

Please amend the claims as follows:

1. (amended) A microcapsule consisting of [one or more] internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and [further consisting of] one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, [SMO-20] 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

9. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-cancer drug or anti-cancer drug precursor.

11. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anesthetic.

13. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic antibiotic.

15. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic antifungal.

17. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic antiviral.

19. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-parasitic.

20. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-inflammatory.

21. (amended) The microcapsule of claim 75, wherein the drug or drug precursor is a hormone, a steroid, hydrocortisone, dexamethasone, a systemic quinolone, an aminoglycoside, an antidote, an anti-cholinesterase, a metal poisoning antidote, a cytotoxic agent, an immunomodulator, a cytokine, an interleukin, an alpha-antitrypsin, a bone metabolism regulator, a hypercalcemic agent, a cardiovascular agent, a beta blocker, a cerebral vasodilator, a cerebral metabolic enhancer, a colony stimulating factor, a granulocyte-colony stimpulating factor, a granulocyte macrophage-colony stimulating factor, a vasopressor, a local diabetic agent, a CT scan enhancer, an angiocardiography

agent, an adenosine deaminase deficiency agent, a gonadotropin inhibitor, an adrenal cortical steroid inhibitor, a gonadotropin releasing hormone stimulant, a urofollitropin, a muscle relaxant, a neuromuscular blocking agent, a prostaglandin analog, a prostaglandin, a prostaglandin inhibitor, a respiratory therapy agent, an anticholinergic, a beta andrenergic stimulator, metoclopramide, tetrahydrocannabinol or a sympathomimetic.

22. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a thrombolytic agent.

24. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise oxides of iron, nickel and zinc.

25. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise about 66 wt % Fe_2O_3, about 9 wt % NiO, and about 25 wt % ZnO.

26. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise Fe_3O_4, oxides of copper, gold, silver or combinations thereof.

27. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise a ceramic coating.

28. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise a methacrylate, alginate, dextran, polyacrylate, or polyvinyl pyrrolidone coating.

29. (amended) The microcapsule of claim 72, wherein the magnetic particles have a Curie temperature of from about 41°C to about 95°C.

37. (amended) The microcapsule of claim [34] 77, wherein the radiocontrast media is a halogenated oil.

38. (amended) The microcapsule of claim 37 wherein the [radiocontrast media] halogenated oil is [halogenated] poppy seed oil, cotton seed oil, soybean oil, safflower oil, corn oil, sunflower seed oil, sesame seed oil, or canola oil.

41. (amended) A composition consisting of microcapsules, [and] wherein said microcapsules consist of two or more internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles selected from the group consisting of oxides of iron, nickel copper, gold, silver, and zinc, in an internal liquid phase in contact with the outer membrane, wherein the magnetic particles have a Curie point higher than the melting temperature of the polymer membrane; and further wherein a first portion of said microcapsules contain magnetic particles with a first Curie point, and a second portion of said microcapsules contain magnetic particles with a second Curie point, and further wherein the first Curie point is different than said second Curie point.

43. (amended) The composition of claim [42] 78, wherein said first portion contains a different drug than said second portion.

44. (amended) A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of [one or more] internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and [further consisting of] one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum powder, acetylene black, sodium amyl alcohol, sorbitan monoleate, [SMO-20] 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

49. (amended) The method of claim [45] 79, wherein the electromagnetic field is an electromagnetic field with a frequency of from about 20 to about 500 KHz.

50. (amended) The method of claim [45] 79, wherein the electromagnetic field is an electromagnetic field with a frequency of from about 85 to about 100 KHz.

55. (amended) The method of claim [54]81, wherein the microcapsules are administered to a subject and detected at a target site by radiography, prior to heating the internal component.

Please add the following claims:

72. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and a particle that is capable of becoming magnetized when a magnetic field is applied to said particle, said particle in an internal liquid phase in contact with the outer membrane, said particle having a higher specific absorption rate for magnetic energy than the specific absorption rate of the polymer membrane, wherein the temperature of said particle is increased by absorbing said energy to melt at least a portion of the poly membrane.

73. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and a spheroid of one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid

phase in contact with the outer membrane, said spheroid having a higher specific absorption rate for ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said spheroid is increased by absorbing said energy to melt at least a portion of the poly membrane.

74. A microcapsule consisting of internal, immiscible liquid phases, said liquid phases consisting of at least one internal aqueous phase and at least one internal hydrocarbon phase, enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

75. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, and a drug or drug precursor, in an internal liquid phase in contact with the outer membrane, said energy absorbing

component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

76. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, and a drug precursor in a first internal liquid phase and an activator of said drug precursor in a second internal liquid phase immiscible with the first internal liquid, one of said internal liquid phases in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

77. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, and containing a radiocontrast

media, in an internal liquid phase in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

78. A composition consisting of microcapsules, wherein said microcapsules consist of two or more internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles selected from the group consisting of oxides of iron, nickel copper, gold, silver, and zinc, in an internal liquid phase in contact with the outer membrane, wherein the magnetic particles have a Curie point higher than the melting temperature of the polymer membrane; and further wherein a first portion of said microcapsules contain magnetic particles with a first Curie point, and a second portion of said microcapsules contain magnetic particles with a second Curie point, and further wherein the first Curie point is different than said second Curie point; and wherein at least certain of the microcapsules contain a drug in said first or second portion or both.

79. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component is a

magnetic particle and the energy is a magnetic field, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

80. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component consists of a spheroid within the microcapsule, and wherein the energy is ultrasound, wherein the energy absorbing component has a higher specific absorption rate for ultrasound energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

81. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component is a magnetic particle and the energy is a magnetic field, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases, wherein the microcapsules contain a drug precursor in a first internal liquid phase and an activator of the drug precursor in a second internal liquid phase immiscible with the first internal liquid phase;

exposing the microcapsules to an energy source effective to mix the immiscible internal liquid phases and increase the kinetics of activation of the drug precursor prior to heating the magnetic particles;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

82. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the

group consisting of amorphous carbon, graphite, aluminum powder, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases, and wherein the microcapsules contain a radiocontrast medium;

wherein the microcapsules are administered to a subject intraarterially, intravenously, intraperitoneally, directly into a tissue, or directly into a tumor;

administering the drug delivery solution to a subject; and

detecting said microcapsules at a target site by radiography, prior to heating the internal component;

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

83. A composition consisting of at least two groups of microcapsules, wherein the microcapsules of said groups of microcapsules consist of one or more internal liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles in an internal liquid phase in contact with the outer membrane, and wherein the microcapsules of a first group of said microcapsules have a polymer outer membrane with a different melting point than microcapsules of a second group of said microcapsules, and wherein both the first and

second melting points are lower than the Curie point of the magnetic particles, said microcapsules contain a drug in a least one of said internal liquid phases.

84. A composition consisting of at least two groups of microcapsules, wherein the microcapsules of said groups of microcapsules consist of one or more internal liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles in an internal liquid phase in contact with the outer membrane, and further wherein the microcapsules of a first group of said microcapsules have a polymer outer membrane with a different melting point than microcapsules of a second group of said microcapsules, and wherein both the first and second melting points are lower than the Curie point of the magnetic particles, and wherein said first group of microcapsules contains a different drug than said second group of microcapsules.

CURRENT PENDING CLAIMS

1. (amended) A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

6. The microcapsule of claim 1, wherein said outer polymer shell comprises glycerol monosterate, glycerol monooleate, glycerol monolaurate, glycerol dioleate, glycerol distearate, cholesterol, stigmasterol, phytosterol, campesterol, lecithins, polyvinyl, pyrrolidone, polyvinyl alcohols, hydrocolloids, polyethylene glycol 400-20000 daltons, dextran 1000-100000 daltons, polyvinylpyrrolidone, polyvinyl alcohols or combinations thereof.

9. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-cancer drug or anti-cancer drug precursor.

10. The microcapsule of claim 9, wherein said anti-cancer drug is cis-platin, doxorubicin, daunorubicin, diaziquone, paclitaxel, aziridinylbenzoquinone, muramyltripeptide, 5-fluorouracil, cyclophosphamide, melphalan, dacarbazine, methotrexate, cytarabine, azaribine, mercaptopurine, thioguanine, vinblastine, vincristine, bleomycin, prednisone, ethiyl estradiol, diethylstilbestrol, tamoxifen, testosterone propionate, or fluoxymesterone.

11. (amended) The microcapsule of claim 75 , wherein said drug or drug precursor is an anesthetic.

12. The microcapsule of claim 11, wherein said anesthetic is cocaine, procaine, or lidocaine.

13. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic antibiotic.

14. The microcapsule of claim 13, wherein said antibiotic is a penicillin, vancomycin, a cephalosporin, erythromycin, ampicillin, amoxicillin, chloramphenicol, rifampicin, gentamicin, sulfanilamide, sulfadiazine, sulfamethoxazole, sulfisoxazole, sulfacetamide, para-aminobenzoic acid, streptomycin, or isoniazid.

15. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic antifungal.

16. The microcapsule of claim 15, wherein said antifungal is nystatin, or amphotericin B, or griseofulvin.

17. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a systemic antiviral.

18. The microcapsule of claim 17, wherein said antiviral is idoxuridine, iododeoxuridine, riboviran, or amantidine.

19. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-parasitic.

20. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is an anti-inflammatory.

21. (amended) The microcapsule of claim 75, wherein the drug or drug precursor is a hormone, a steroid, hydrocortisone, dexamethasone, a systemic quinolone, an aminoglycoside, an antidote, an anti-cholinesterase, a metal poisoning antidote, a cytotoxic agent, an immunomodulator, a cytokine, an interleukin, an alpha-antitrypsin, a bone metabolism regulator, a hypercalcemic agent, a cardiovascular agent, a beta blocker, a cerebral vasodilator, a cerebral metabolic enhancer, a colony stimulating factor, a granulocyte-colony stimulating factor, a granulocyte macrophage-colony stimulating factor, a vasopressor, a local diabetic agent, a CT

scan enhancer, an angiocardiography agent, an adenosine deaminase deficiency agent, a gonadotropin inhibitor, an adrenal cortical steroid inhibitor, a gonadotropin releasing hormone stimulant, a urofollitropin, a muscle relaxant, a neuromuscular blocking agent, a prostaglandin analog, a prostaglandin, a prostaglandin inhibitor, a respiratory therapy agent, an anticholinergic, a beta andrenergic stimulator, metoclopramide, tetrahydrocannabinol or a sympathomimetic.

22. (amended) The microcapsule of claim 75, wherein said drug or drug precursor is a thrombolytic agent.

23. The microcapsule of claim 22, wherein said thrombolytic agent is urokinase (uPA), tissue plasminogen activator (tPA) or streptokinase.

24. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise oxides of iron, nickel and zinc.

25. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise about 66 wt % Fe_2O_3, about 9 wt % NiO, and about 25 wt % ZnO.

26. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise Fe_3O_4, oxides of copper, gold, silver or combinations thereof.

27. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise a ceramic coating.

28. (amended) The microcapsule of claim 72, wherein the magnetic particles comprise a methacrylate, alginate, dextran, polyacrylate, or polyvinyl pyrrolidone coating.

29. (amended) The microcapsule of claim 72, wherein the magnetic particles have a Curie temperature of from about 41°C to about 95°C.

30. The microcapsule of claim 1, wherein the microcapsule has a diameter of from about 1 to about 500 microns.

31. The microcapsule of claim 1, wherein the microcapsule has a diameter of from about 300 to about 500 microns.

32. The microcapsule of claim 1, wherein the microcapsule has a diameter of from about 50 to about 300 microns.

33. The microcapsule of claim 1, wherein the microcapsule has a diameter of from about 30 to about 50 microns.

34. The microcapsule of claim 1, wherein the microcapsule has a diameter of from about 20 to about 30 microns.

35. The microcapsule of claim 1, wherein the microcapsule has a diameter of from about 1 to about 20 microns.

37. (amended) The microcapsule of claim 77, wherein the radiocontrast media is a halogenated oil.

38. (amended) The microcapsule of claim 37 wherein the halogenated oil is poppy seed oil, cotton seed oil, soybean oil, safflower oil, corn oil, sunflower seed oil, sesame seed oil, or canola oil.

39. The microcapsule of claim 37, wherein the radiocontrast media is iodinated poppy seed oil.

40. The microcapsule of claim 1, contained in a pharmaceutically acceptable solution.

41. (amended) A composition consisting of microcapsules, wherein said microcapsules consist of two or more internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic

particles selected from the group consisting of oxides of iron, nickel copper, gold, silver, and zinc, in an internal liquid phase in contact with the outer membrane, wherein the magnetic particles have a Curie point higher than the melting temperature of the polymer membrane; and further wherein a first portion of said microcapsules contain magnetic particles with a first Curie point, and a second portion of said microcapsules contain magnetic particles with a second Curie point, and further wherein the first Curie point is different than said second Curie point.

43. (amended) The composition of claim 78, wherein said first portion contains a different drug than said second portion.

44. (amended) A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum powder, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component

and to melt at least a portion of the polymer outer membrane and to release the drug.

49. (amended) The method of claim 79, wherein the electromagnetic field is an electromagnetic field with a frequency of from about 20 to about 500 KHz.

50. (amended) The method of claim 79, wherein the electromagnetic field is an electromagnetic field with a frequency of from about 85 to about 100 KHz.

55. The method of claim 81, wherein the microcapsules are administered to a subject and detected at a target site by radiography, prior to heating the internal component.

56. The method of claim 44, wherein the microcapsules are administered to a subject intraarterially, intravenously, intraperitoneally, directly into a tissue, or directly into a tumor.

69. A composition consisting of at least two groups of microcapsules, wherein the microcapsules of said groups of microcapsules consist of one or more internal liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles in an internal liquid phase in contact with the outer membrane, and further wherein the microcapsules of a first group of said microcapsules have a polymer outer membrane with a different melting point than microcapsules of a second group of said microcapsules, and further wherein both the first and second melting points are lower than the Curie point of the magnetic particles.

72. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and a particle that is capable of becoming magnetized when a magnetic field is applied to said particle, said particle in an internal liquid phase in contact with the outer membrane, said particle having a higher specific absorption rate for magnetic energy than the specific absorption rate of the polymer membrane, wherein the temperature of said particle is increased by absorbing said energy to melt at least a portion of the poly membrane.

73. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and a spheroid of one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, said spheroid having a higher specific absorption rate for ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said spheroid is increased by absorbing said energy to melt at least a portion of the poly membrane.

74. A microcapsule consisting of internal, immiscible liquid phases, said liquid phases consisting of at least one internal aqueous phase and at least one internal hydrocarbon phase, enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite,

aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

75. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, and a drug or drug precursor, in an internal liquid phase in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

76. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, and a drug precursor in a first internal liquid phase and an

activator of said drug precursor in a second internal liquid phase immiscible with the first internal liquid, one of said internal liquid phases in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

77. A microcapsule consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum power, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, and containing a radiocontrast media, in an internal liquid phase in contact with the outer membrane, said energy absorbing component having a higher specific absorption rate for magnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, wherein the temperature of said energy absorbing component is increased by absorbing said energy to melt at least a portion of the poly membrane.

78. A composition consisting of microcapsules, wherein said microcapsules consist of two or more internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles selected from the group consisting of oxides of iron, nickel copper, gold, silver, and zinc, in an internal liquid phase in contact with the outer membrane, wherein the magnetic particles have a Curie point

higher than the melting temperature of the polymer membrane; and further wherein a first portion of said microcapsules contain magnetic particles with a first Curie point, and a second portion of said microcapsules contain magnetic particles with a second Curie point, and further wherein the first Curie point is different than said second Curie point; and wherein at least certain of the microcapsules contain a drug in said first or second portion or both.

79. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component is a magnetic particle and the energy is a magnetic field, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

80. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components in an internal liquid phase in contact

with the outer membrane, wherein the energy absorbing component consists of a spheroid within the microcapsule, and wherein the energy is ultrasound, wherein the energy absorbing component has a higher specific absorption rate for ultrasound energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

81. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component is a magnetic particle and the energy is a magnetic field, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases, wherein the microcapsules contain a drug precursor in a first internal liquid phase and an activator of the drug precursor in a second internal liquid phase immiscible with the first internal liquid phase;

exposing the microcapsules to an energy source effective to mix the immiscible internal liquid phases and increase the kinetics of activation of the drug precursor prior to heating the magnetic particles;

administering the drug delivery solution to a subject; and

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

82. A method of controlling the release of a drug consisting of:

providing a drug delivery solution consisting of microcapsules consisting of internal, immiscible liquid phases enclosed within a polymer outer membrane having a melting temperature, and one or more energy absorbing components selected from the group consisting of amorphous carbon, graphite, aluminum powder, acetylene black, sodium amyl alcohol, sorbitan monoleate, 2% sorbitan monooleate/20 moles ethylene oxide, and paraffin oil, in an internal liquid phase in contact with the outer membrane, wherein the energy absorbing component has a higher specific absorption rate for electromagnetic, radiofrequency, microwave, or ultrasound energy than the specific absorption rate of the polymer membrane, and a drug contained in at least one of the internal liquid phases, and wherein the microcapsules contain a radiocontrast medium;

wherein the microcapsules are administered to a subject intraarterially, intravenously, intraperitoneally, directly into a tissue, or directly into a tumor;

administering the drug delivery solution to a subject; and

detecting said microcapsules at a target site by radiography, prior to heating the internal component;

exposing the microcapsule to an energy source, effective to heat the internal component and to melt at least a portion of the polymer outer membrane and to release the drug.

83. A composition consisting of at least two groups of microcapsules, wherein the microcapsules of said groups of microcapsules consist of one or more internal liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles in an internal liquid phase in contact with the outer membrane, and wherein the microcapsules of a first group of said microcapsules have a polymer outer membrane with a different melting point than microcapsules of a second group of said microcapsules, and wherein both the first and second melting points are lower than the Curie point of the magnetic particles, said microcapsules contain a drug in a least one of said internal liquid phases.

84. A composition consisting of at least two groups of microcapsules, wherein the microcapsules of said groups of microcapsules consist of one or more internal liquid phases enclosed within a polymer outer membrane having a melting temperature, and further consisting of one or more magnetic particles in an internal liquid phase in contact with the outer membrane, and further wherein the microcapsules of a first group of said microcapsules have a polymer outer membrane with a different melting point than microcapsules of a second group of said microcapsules, and wherein both the first and second melting points are lower than the Curie point of the magnetic particles, and wherein said first group of microcapsules contains a different drug than said second group of microcapsules.